

## CLAIMS

1. A method for eliminating defects from single crystal silicon, comprising the steps of:

performing an oxidation treatment on single crystal silicon manufactured by the CZ method; and

performing an ultra high temperature heat treatment at a temperature of at least about 1300°C, and thereby eliminating any void defects present in the single crystal silicon.

2. A method for eliminating defects from single crystal silicon, comprising the steps of:

performing an oxidation treatment on single crystal silicon manufactured by the CZ method, and forming an initial oxide film with a minimum thickness of between 396 and 400 nm; and

performing an ultra high temperature heat treatment at a temperature of at least about 1300°C, and thereby eliminating any void defects present in the single crystal silicon.

3. A method for eliminating defects from single crystal silicon, comprising the steps of:

performing an oxidation treatment on a block of single crystal silicon manufactured by the CZ method; and

performing an ultra high temperature heat treatment at a temperature of at least about 1300°C, and thereby eliminating any void defects present in the block of single crystal silicon.

4. A method for eliminating defects from single crystal silicon, comprising the steps of:

performing an oxidation treatment on a wafer of single crystal silicon manufactured by the CZ method;

laminating a plurality of the single crystal silicon wafers; and

performing an ultra high temperature heat treatment at a temperature of at least about 1300°C on the plurality of laminated single crystal silicon wafers, and thereby eliminating any void defects present in the single crystal silicon wafers.

5. The method for eliminating defects from single crystal silicon according to any of Claims 1 to 4, wherein the ultra high temperature heat treatment is performed in an atmosphere with an oxygen partial pressure of 0.5 to 100%.

6. The method for eliminating defects from single crystal silicon according to any of Claims 1 to 4, wherein the initial oxygen concentration in the single crystal silicon is no more than  $14 \times 10^{17}$  (atoms/cc).

7. The method for eliminating defects from single crystal silicon according to any of Claims 1 to 4, wherein the oxidation treatment is performed in the course of

raising the temperature to the level at which the ultra high temperature heat treatment is performed.

8. The method for eliminating defects from single crystal silicon according to any of Claims 1 to 4, further comprising a step of performing the oxidation treatment at a temperature of 1200°C or lower in the course of raising the temperature to the level at which the ultra high temperature heat treatment is performed.

9. The method for eliminating defects from single crystal silicon according to any of Claims 1 to 4, further comprising a step of performing a heat treatment for forming oxygen precipitation nuclei in the single crystal silicon at a temperature of 400 to 1000°C in the course of raising or lowering the temperature to or from the level at which the ultra high temperature heat treatment is performed.

10. The method for eliminating defects from single crystal silicon according to any of Claims 1 to 4, wherein one or more stages of heat treatment are further performed at a temperature of 400 to 1000°C after the ultra high temperature heat treatment has been performed, and oxygen precipitation nuclei are formed in the single crystal silicon.

11. A method for eliminating defects from single crystal silicon, wherein an ultra high temperature heat treatment is performed in an oxygen atmosphere and at a temperature over 1200°C but lower than 1310°C on single crystal silicon that has been

manufactured by the CZ method and that has not undergone an oxidation treatment, thereby eliminating any void defects present in the single crystal silicon.

12. Single crystal silicon, which is manufactured by the CZ method and on whose surface an initial oxide film is formed, and which undergoes an ultra high temperature heat treatment at a temperature of at least about 1300°C.

13. Single crystal silicon manufactured by the CZ method, wherein after an initial oxide film with a minimum thickness of between 396 and 400 nm is formed on the surface, the single crystal silicon undergoes an ultra high temperature heat treatment at a temperature of at least about 1300°C.

14. A block of single crystal silicon manufactured by the CZ method, wherein after an initial oxide film is formed on the surface, the single crystal silicon undergoes an ultra high temperature heat treatment at a temperature of at least about 1300°C.

15. Single crystal silicon, which has been manufactured by the CZ method, and which has undergone an ultra high temperature heat treatment in an oxygen atmosphere and at a temperature over 1200°C but lower than 1310°C and without any initial oxide film being formed on the surface.

16. A method for eliminating defects from single crystal silicon, in which single crystal silicon that has been manufactured by the CZ method and that has not

undergone an oxidation treatment is subjected to an ultra high temperature heat treatment by being heated to an ultra high temperature in an oxygen gas atmosphere or an atmosphere containing oxygen gas, and then cooled, thereby eliminating any void defects present in the single crystal silicon,

wherein void defects present in the single crystal silicon are eliminated by adjusting parameters comprising the initial oxygen concentration in the single crystal silicon, the oxygen partial pressure of the atmosphere during heating up to the ultra high temperature, the oxygen partial pressure of the atmosphere during the ultra high temperature heat treatment, and the temperature at which the ultra high temperature heat treatment is performed.

17. The method for eliminating defects from single crystal silicon according to Claim 16, wherein the oxygen partial pressure of the atmosphere during the ultra high temperature heat treatment is at least 50%, the oxygen partial pressure of the atmosphere during heating up to the ultra high temperature is less than 25%, and the temperature at which the ultra high temperature heat treatment is performed is over 1200°C but lower than 1310°C.

18. The method for eliminating defects from single crystal silicon according to Claim 16, wherein the oxygen partial pressure of the atmosphere during the ultra high temperature heat treatment is at least 25%, the oxygen partial pressure of the atmosphere during heating up to the ultra high temperature is at least 25%, and the temperature at which the ultra high temperature heat treatment is performed is at least 1200°C.

19. The method for eliminating defects from single crystal silicon according to Claim 16, wherein the oxygen partial pressure of the atmosphere during the ultra high temperature heat treatment and the oxygen partial pressure of the atmosphere during heating up to the ultra high temperature are at least 25%, and the temperature at which the ultra high temperature heat treatment is performed is at least 1240°C.

20. The method for eliminating defects from single crystal silicon according to Claim 16, wherein as the initial oxygen concentration in the single crystal silicon is raised above  $10 \times 10^{17}$  (atoms/cc), the temperature at which the ultra high temperature heat treatment is performed is raised above 1260°C, and the oxygen partial pressure of the atmosphere during the ultra high temperature heat treatment and the oxygen partial pressure of the atmosphere during heating up to the ultra high temperature are raised above 25%.